

WHAT IS CLAIMED IS:

1. A composition comprising an impact modified polystyrene prepared using a process comprising dissolving a styrene-conjugated diene-styrene block copolymer in styrene monomer and polymerizing the styrene monomer wherein the impact modified polystyrene has a haze value of less than or equal to 12 percent.
2. The composition of Claim 1 wherein the conjugated diene is butadiene.
3. The composition of Claim 2 wherein the impact modified polystyrene has a haze value of less than or equal to 8 percent.
4. The composition of Claim 2 wherein the impact modified polystyrene has a haze value of less than or equal to 6 percent.
5. The composition of Claim 2 wherein the styrene-butadiene-styrene block copolymer has a general formula:
$$\text{S-B-S}$$
wherein S is styrene and B is butadiene or isoprene.
6. The composition of Claim 2 wherein the styrene-butadiene-styrene block copolymer has a general formula:
$$(\text{SB})_n\text{X}.$$
wherein X stands for the residue of a coupling agent; and n is more than 1.

7. The composition of Claim 2 wherein the styrene-butadiene-styrene block copolymer has a molecular weight range of from about 2,000 to 300,000 Daltons.
- 5 8. The composition of Claim 2 wherein the styrene-butadiene-styrene block copolymer has a styrene content of at least 50 percent.
9. The composition of Claim 2 wherein the styrene-butadiene-styrene block copolymer is a tapered block copolymer.
- 10 10. The composition of Claim 2 wherein the impact modified polystyrene has a ratio of M_z/M_n of at least 4.1
11. The composition of Claim 2 wherein the impact modified polystyrene has a ratio of M_z/M_n of from about 5.5 to about 25.
- 15 12. The composition of Claim 2 wherein the impact modified polystyrene has a ratio of M_z/M_n of from about 7 to about 22.
13. The composition of Claim 2 wherein the impact modified polystyrene has a melt flow index of from about 2 to about 6 g/10 minutes.
14. The composition of Claim 2 wherein the impact modified polystyrene has a melt flow index of from about 6 to about 14 g/10 minutes.
- 25 15. The composition of Claim 2 additionally comprising an additive selected from the group consisting of fillers, chain transfer agents, talc, anti-

oxidants, UV stabilizers, lubricants, mineral oil, plasticizers, and mixtures thereof.

16. The composition of Claim 1 wherein the impact modified polystyrene is prepared using a process further comprising polymerizing the styrene monomer and in the presence of a chain transfer agent.

17. The composition of Claim 17 wherein the chain transfer agent is n-dodecyl mercaptan (NDM) and the NDM is present at a concentration of from about 50 to about 500ppm.

18. A process for preparing an impact modified polystyrene comprising dissolving a styrene-butadiene-styrene block copolymer in styrene monomer and polymerizing the styrene monomer wherein the impact modified polystyrene has a haze value of less than or equal to 12 percent.

19. The process of Claim 18 wherein the polymerization is initiated thermally.

20. The process of Claim 19 wherein the polymerization is initiated using a chemical polymerization initiator.

21. The process of Claim 18 additionally comprising using a solvent to dissolve the styrene-butadiene-styrene copolymer.

22. The Process of Claim 21 wherein the solvent is selected from the group consisting of ethylbenzene, toluene, xylenes, cyclohexane, dodecane, and mixtures thereof.
- 5 23. The process of Claim 18 further comprising polymerizing the styrene monomer and in the presence of a chain transfer agent.
24. The process of Claim 23 wherein the chain transfer agent is NDM and the NDM is present at a concentration of from about 50 to about 500ppm.
- 10 25. A composition comprising an impact modified polystyrene prepared using a process comprising dissolving a styrene-butadiene-styrene block copolymer in styrene monomer and polymerizing the styrene monomer wherein the impact modified polystyrene has a ratio of M_z/M_n of at least 4.1.
- 15 26. The composition of Claim 25 wherein the impact modified polystyrene has a ratio of M_z/M_n of from about 5.5 to about 25.
- 20 27. The composition of Claim 25 wherein the impact modified polystyrene has a ratio of M_z/M_n of from about 7 to about 22.
28. The composition of Claim 25 wherein the impact modified polystyrene has a haze value of less than or equal to 12 percent.
- 25 29. A process for preparing an impact modified polystyrene comprising dissolving a styrene-butadiene-styrene block copolymer in styrene monomer

and polymerizing the styrene monomer wherein the impact modified polystyrene has a has a M_z/M_n of at least 4.1.

30. A composition comprising an impact modified polystyrene prepared
5 using a process comprising dissolving a styrene-butadiene-styrene block
copolymer in styrene monomer and polymerizing the styrene monomer
wherein the impact modified polystyrene has a haze value of less than or
equal to 12 percent, the styrene-butadiene-styrene block copolymer is a
tapered block copolymer having a styrene content of about 70 percent, a M_w
10 of from about 50,000 to about 250,000 Daltons, and is present at a
concentration of from about 5 to about 20 percent.